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BSIT 3 - 5

DATA SCIENCE

ASSIGNMENT NO. 2

1. Create a R programming that can use a different operation using concatenate.

A. Arithmetic Operations (Let num1 = 24, num2 = 30)

```
> num1 <- 24
> num2 <- 30
```

Values	
num1	24
num2	30

1. Addition

```
> cat("Addition: ", num1, " + ", num2, " = ", num1 + num2, "\n")
Addition:  24  +  30  =  54
```

2. Subtraction

```
> cat("Subtraction: ", num1, " - ", num2, " = ", num1 - num2, "\n")
Subtraction:  24  -  30  =  -6
```

3. Multiplication

```
> cat("Multiplication: ", num1, " * ", num2, " = ", num1 * num2, "\n")
Multiplication:  24  *  30  =  720
```

4. Division

```
> cat("Division: ", num1, " / ", num2, " = ", num1 / num2, "\n")
Division:  24  /  30  =  0.8
```

5. Modulus

```
> cat("Modulus: ", num1, " %% ", num2, " = ", num1 %% num2, "\n")
Modulus:  24  %%  30  =  24
```

6. Integer Division

```
> cat("Integer Division: ", num1, " %/% ", num2, " = ", num1 %/% num2, "\n")
Integer Division:  24  %/%  30  =  0
```

7. Exponent

```
> cat("Exponent: ", num1, " ^ ", num2, " = ", num1 ^ num2, "\n")
Exponent:  24  ^  30  =  2.548809e+41
```

B. Relational Operations (Let num1 = 56, num2 = 45,)

```
> num1 <- 56
> num2 <- 45
```

Values	
num1	56
num2	45

1. Less Than

```
> cat("Less Than: ", num1, " < ", num2, " = ", num1 < num2, "\n")
Less Than:  56  <  45  =  FALSE
```

2. Less than or equal to

```
> cat("Less Than or Equal To: ", num1, " <= ", num2, " = ", num1 <= num2, "\n")
Less Than or Equal To:  56  <=  45  =  FALSE
```

3. Greater than

```
> cat("Greater Than: ", num1, " > ", num2, " = ", num1 > num2, "\n")
Greater Than:  56  >  45  =  TRUE
```

4. Greater or equal to

```
> cat("Greater or Equal To: ", num1, " >= ", num2, " = ", num1 >= num2, "\n")
Greater or Equal To:  56  >=  45  =  TRUE
```

5. Equal to

```
> cat("Equal To: ", num1, " == ", num2, " = ", num1 == num2, "\n")
Equal To:  56  ==  45  =  FALSE
```

6. Not Equal to

```
> cat("Not Equal To: ", num1, " != ", num2, " = ", num1 != num2, "\n")
Not Equal To:  56  !=  45  =  TRUE
```

C. Logical Operation

```
> x <- TRUE
> y <- FALSE
```

Values	
x	TRUE
y	FALSE

1. Logical not

```
> cat("Logical NOT (!): !", x, " = ", !x, "\n")
Logical NOT (!): ! TRUE  =  FALSE
```

2. Element-wise logical AND

```
> cat("Element-wise Logical AND (&): ", x, " & ", y, " = ", x & y, "\n")
Element-wise Logical AND (&):  TRUE  &  FALSE  =  FALSE
```

3. Logical AND

```
> cat("Logical AND (&&): ", x, " && ", y, " = ", x && y, "\n")
Logical AND (&&):  TRUE  &&  FALSE  =  FALSE
```

4. Element-wise logical OR

```
> cat("Element-wise Logical OR (|): ", x, " | ", y, " = ", x | y, "\n")
Element-wise Logical OR (|):  TRUE  |  FALSE  =  TRUE
```

5. Logical OR

```
> cat("Logical OR (||): ", x, " || ", y, " = ", x || y, "\n")
Logical OR (||):  TRUE  ||  FALSE  =  TRUE
```

D. Combination

Let num1 = 76, num2 = 56, num3 = 74, num4 = 43, num5 = False , num6 = True, num7 = True

```
> num1 <- 76
> num2 <- 56
> num3 <- 74
> num4 <- 43
> num5 <- FALSE
> num6 <- TRUE
> num7 <- TRUE
```

Values	
num1	76
num2	56
num3	74
num4	43
num5	FALSE
num6	TRUE
num7	TRUE
x	TRUE
y	FALSE

1. (num1 > num2) || (!num6) || (!num5) || (num2 != num3)

```
> cat("(num1 > num2) || (!num6) || (!num5) || (num2 != num3): ",
+     (num1 > num2) || (!num6) || (!num5) || (num2 != num3), "\n")
(num1 > num2) || (!num6) || (!num5) || (num2 != num3):  TRUE
```

2. (num1 > num4) || (!num7) || (!num4) || (num2 <= num3)

```
> cat("(num1 > num4) || (!num7) || (!num4) || (num2 <= num3): ",
+     (num1 > num4) || (!num7) || (!num4) || (num2 <= num3), "\n")
(num1 > num4) || (!num7) || (!num4) || (num2 <= num3):  TRUE
```

3. (num5 > num4) || (!num1) || (!num6) || (num1 >= num5)

```
> cat("(num5 > num4) || (!num1) || (!num6) || (num1 >= num5): ",
+     (num5 > num4) || (!num1) || (!num6) || (num1 >= num5), "\n")
(num5 > num4) || (!num1) || (!num6) || (num1 >= num5):  TRUE
```